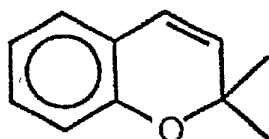


# CLAIMS

1. Method for preparing a latex with photochromic properties comprising the following steps :

- 5 (1) preparing an aqueous emulsion (I) of a composition A comprising :  
 at least one organic monomer Z with a C=C group, capable of free-radical polymerization, and  
 - one or more organic photochromic compounds containing a nucleus of formula :



(2) polymerising composition A of organic monomers in the presence of a water-soluble initiator to obtain said latex with photochromic properties.

20 2. Method according to claim 1, characterized by the fact that the polymerization of composition A is at least partial and to the latex produced by this at least partial polymerization of composition A is added a second aqueous emulsion (II) containing a composition B of at least one organic monomer capable of free-radical polymerization, then said composition B is polymerised so as to obtain a latex of at least biphasic photochromic particles.

25 3. Method according to claim 1 or 2, characterized by the fact that the biphasic latex has a core/skin structure.

4. Method according to any one of the preceding claims, characterized by the fact that the water-soluble initiator is introduced progressively into the aqueous emulsion I, throughout the polymerization step (2).

30 5. Method according to any one of the preceding claims, characterized by the fact that the water-soluble initiator and the aqueous emulsion (I) are each introduced progressively into the reaction medium throughout the polymerization step (2).

35 6. Method according to any one of the preceding claims, characterized by the fact that the water-soluble initiator is selected from the alkali and ammonium persulfates, and preferably potassium or sodium persulfate.

7. Method according to any one of the preceding claims, characterized by the fact that the percentage by weight of the initiator with respect to the organic weight of the monomer or monomers capable of free-radical polymerization used for the preparation of the latex is between 0.1 and 1%.

8. Method according to any one of the preceding claims, characterized by the fact that at least one of the monomers Z is a low Tg monomer which leads to a homopolymer whose glass transition temperature is less than or equal to 0°C.

9. Method according to any one of the preceding claims, characterized by the fact that the organic monomer Z is an alkyl (meth)acrylate monomer.

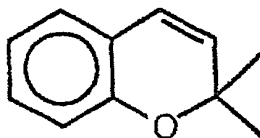
10. Method according to any one of the preceding claims, characterized by the fact that the low Tg monomer represents at least 40% by weight of the monomers capable of free-radical polymerization.

11. Method according to any one of the preceding claims, characterized by the fact that the particles of the latex with photochromic properties have a diameter of 50 to 400 nm.

12. Method according to any one of the preceding claims, characterized by the fact that the dry extract of the latex represents from 30 to 50% of the total weight of the latex.

13. Method according to any one of the preceding claims, characterized by the fact that the pH of the latex is between 5 and 7.

14. Latex with photochromic properties, characterized by the fact that it comprises particles of a polymer material resulting from the free-radical polymerization of at least one monomer Z with a C=C group containing one or more organic photochromic compounds containing a nucleus of formula :



the particles of said polymer material having a size of between 50 and 400 nm, preferably between 80 and 300 nm, and even better between 150 and 250 nm.

15. Latex according to claim 14, characterized by the fact that the organic photochromic compound or compounds do not contain an indoline ring.

16. Latex according to claim 14 or 15, characterized by the fact that the

particles of polymer material have a biphasic structure, preferably of the core/skin type.

17. Latex according to claim 16, characterized by the fact that the organic photochromic compound or compounds are contained in the core of the particles.

18. Latex according to any one of claims 14 to 17, characterized by the fact that the dry extract of the latex represents from 30 to 50% of the total weight of the latex.

19. Substrate coated with a film obtained by drying of the latex according to any one of claims 14 to 18.

20. Substrate according to claim 19, characterized by the fact that the film has a thickness of between 3 and 20  $\mu\text{m}$ .

21. Substrate according to any one of claims 19 or 20, characterized by the fact that an anti-abrasion coating is applied onto the dried latex film.

22. Substrate according to claim 22, characterized by the fact that an anti-reflection coating is applied onto the anti-abrasion coating.

23. Substrate according to any one of claims 20 to 23, characterized by the fact that it constitutes an ophthalmic lens.